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Falling Short: Intergovernmental Transfers in China

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Recommended Citation

Liu, Yongzheng; Martinez-Vazquez, Jorge; and Qiao, Baoyun, "Falling Short: Intergovernmental Transfers in China" (2014).
International Center for Public Policy Working Paper Series. Paper 1.
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International Center for Public Policy
Working Paper 1423
May 2014

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**International Center for Public Policy
Working Paper 14-23**

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Falling Short: Intergovernmental Transfers in China¹

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Abstract: This paper provides quantitative and qualitative assessments of the equalization impact on regional fiscal disparities of the current fiscal transfers system in China. It also discusses the main problems with the design of transfers and the options for their reform. In particular, by using provincial level data for the period 1995-2011 and county level data for the period 1995-2005, we document the trends in own revenue disparities across and within provinces and analyze how the different types of fiscal transfers have affected these two types of disparities. The paper also examines how expenditure disparities have translated into disparities in service provision and simulates the additional amounts of funding needed from equalization grants to bring the less well-off provinces to the country average for service provision.

¹ We would like to thank the editors and two anonymous referees for helpful comments and suggestions, which helped improve the paper. We also thank Shaozhe Zhang and Wei Zhou for their help with data collection.

1. Introduction

The most recent reform that has been undertaken by China's central government in the area of intergovernmental fiscal relations is the so-called "tax-sharing system" or TSS reform in 1994, which largely reshaped the fiscal landscape in China by recentralizing revenues while at the same time further decentralizing expenditure responsibilities. A natural outcome of this reform in revenue and expenditure assignments---indeed one that has been frequently and increasingly criticized---was the creation of large horizontal fiscal disparities across subnational governments (Wong 1998, 2000; World Bank 2002; Martinez-Vazquez et al. 2008; Zhao 2009; Martinez-Vazquez and Qiao 2011). These disparities pose serious threats for the cohesion of the nation. For one thing, increasing horizontal disparities in the allocation of fiscal resources is leading to inequitable fiscal outcomes at the sub-national level; in particular, there is a lack of access to basic public services by many residents in poor and rural local jurisdictions of China (Bahl 1999; Uchimura and Jutting 2009; Jin and Sun 2011; Shen et al. 2012). In addition, from an efficiency viewpoint, large disparities in the availability of public services lead to economically inefficient migration patterns and geographical allocation of economic resources; the increase in fiscal disparities has become an increasingly significant obstacle to the country's economic growth and political stability (Knight and Li 1999; Bird and Wong 2005; Wang et al. 2000).

As a supplementary policy tool to potentially ameliorate regional fiscal disparities, a formal intergovernmental fiscal transfer system was first established in the 1994 reform. Despite the fact that the central government has been increasingly stepping up its efforts to strengthen the role of the transfer system, most of the current studies reach the same conclusion that fiscal disparities have remained high in the post-1994 era---indicating a limited equalizing (if not anti-equalizing) effect of the system (Knight and Li 1999; Ahmad et al. 2004; Dabla-Norris 2005; Tsui 2005; Heng 2008; Martinez-Vazquez et al. 2008; Zhao 2009; Huang and Chen 2012; Wang and Herd 2013). In particular, based on relevant methods to decompose the sources of fiscal inequality indices, Tsui (2005), Heng (2008) and Zhao (2009) find evidence that fiscal transfers from the central government do not shrink but indeed widen fiscal disparities at both the county and

provincial levels. In contrast, Huang and Chen (2012), Jin et al. (2013), and Wang and Herd (2013) detect some equalizing elements of the system, though the overall equalizing effect is limited---in large part due to the offsetting effects from different components of the transfer system.

Nevertheless, the design of any system of transfers is a complex matter, and in practice very few countries are able to get it right, especially when the decentralized system of finance is still fairly new. In this paper we focus exclusively on the analysis of the existing transfer system in China and aim to provide both quantitative and qualitative assessments on the existing regional fiscal disparities and the overall equalization effect of the transfers system. Our paper differs from previous studies in several important ways. Specifically, we analyze the following: (a) the own revenue disparities across and within provinces; (b) the equalizing/un-equalizing effects of fiscal transfers and its components on revenue disparities across and within provinces; (c) how disparities in expenditure finally translate into disparities in service provision; (d) how much additional funding would be needed from the central government to bring the less well-off provinces to the country average; and (e) the possible options for comprehensive reform.

The rest of the paper is organized as follows. In section 2, we first review the basic setup of the current transfer system. In section 3 we use both provincial level data for the period 1995-2011 and county level data for the period 1995-2005 to analyze the existing regional disparities in fiscal resources and the equalization effect of the current fiscal transfer system. In section 4, we summarize the main structural problems with the current transfer system and propose some options for comprehensive reform of China's transfer system. The last section concludes.

2. A Brief Perspective on Intergovernmental Transfers in China

In 1994, the Chinese government implemented the TSS reform classifying all taxes into three categories: central taxes, shared taxes, and local taxes between the central and local government.² Meanwhile, separate central and local tax bureaus were established at the

² Central taxes include the tariff and tonnage tax, the consumption tax and VAT levied by the customs, the consumption tax and income tax from enterprises that are subordinate to the central government, the

provincial, city/prefecture, county, and township levels. The central tax bureau was put in charge of collecting central taxes and most of the shared taxes, while the local tax bureaus were made responsible for the collection of all local taxes.

In addition to rearranging revenue assignments between the central and local governments, the TSS reform introduced for the first time in China rules-based intergovernmental fiscal transfer programs with the objective of accommodating gaps in fiscal capacity and expenditure needs across local jurisdictions.

However, after twenty years in operation, the new system of transfers has been only partially successful at that objective. The limited equalization impact of the intergovernmental transfers has been due in part to its initial design. As an important example, which is further discussed below, the TSS reform introduced the “tax rebates” as a “hold harmless” compensation for the richer provinces, which ended up being a major component of the transfer system with persistent highly un-equalizing results. The general-purpose equalization transfers later introduced in 1995 have only played a limited role in offsetting existing fiscal disparities. Overall, intergovernmental transfers from the center to the provinces are still not well developed. The situation is worse for transfers from provincial to local governments where, in all these years, no transparent framework has emerged. In what follows we take a closer look at the current transfer system at both levels.

income taxes from rail transportation, state post, state-owned commercial banks, and head office of insurance companies. Local taxes include the business tax and urban infrastructure tax (other than from the headquarters of banks, and insurance companies, and rail transportation), the income tax from locally owned enterprises, the urban land use tax, tax on occupation of arable land, VAT on land, the property tax and inheritance tax, the contract tax, the motor-vehicle and ship use tax, the agriculture tax, the banquet tax, the livestock slaughter tax, the farmland conversion tax, and the reorientation tax on capital construction. Shared taxes include VAT (75% central; 25% local), the personal income tax and enterprise income tax (50:50 in 2002; 60:40 from 2003), the urban infrastructure tax (rail transportation, headquarters of banks and insurance companies 100% central, others 100% local), the resource tax (offshore 100% central and on land, 100% local), and the stamp tax on security transactions (97% central; 3% local).

2.1 Central-provincial transfers

Under the current setting, fiscal transfers from the central government to the provincial governments can be broadly categorized into three main types:

(1) *The tax rebate*

The tax rebate, a compromised outcome to smooth the implementation of the TSS reform, was introduced to guarantee the vested interests of provincial governments prior to the reform. Its essence was to return to the provinces the amounts of VAT, consumption taxes and income taxes that otherwise would have gone to these provinces under the system existing prior to the reform. More specifically, the tax rebates on VAT and consumption taxes considered 1993 as the base year and, beginning in 1994, all provinces were guaranteed to receive at a minimum the VAT and consumption tax revenues they had retained in 1993.³

In 2002, the corporate income taxes and personal income taxes became shared taxes as opposed to local taxes, and so additional rebates on income taxes were introduced to protect the vested interests of local governments. In particular, if the amount of income tax revenues received by local governments under the new sharing scheme were to be less than what they received in 2001, the central government was supposed to provide additional income tax rebates to fill the gaps.

Although quite significant in absolute terms in the initial years, because the tax rebates were determined on the basis of the nominal collections of the base year, the relative importance of the income tax rebates, as was the case for the VAT and consumption tax rebates, has been rapidly decreasing over time.

(2) *The system of equalization transfers*

Currently, the equalization system in China involves a number of formula and non-formula-based transfers, all of which have in common the general objective of reducing

³ See Zhang and Martinez-Vazquez (2003) for a more detailed description of the formula used in the calculation of the rebate amount.

horizontal fiscal disparities. And while over time the relative importance of transfers with equalization objectives has grown steadily, that of tax rebates has continued to decline. Transfers with an equalization objective include the following:

(a) The “transitory period transfers” (renamed “general-purpose grants” after 2001). This transfer represents the first formula-based transfer program introduced in China, with an explicit equalization objective to reduce fiscal disparities across provinces. The amount of the transfer is determined by a formula based on the computation of a standard revenue and standard expenditure by the central authority. Standard revenues are measured by using estimates of the tax bases and the standard tax rate. Standard expenditures are calculated using a myriad of expenditure needs categories including spending on administration services, public safety, education, urban maintenance, social assistance, and heating.⁴ Note that even though the origin of this transfer can be traced back to 1995, just after the TSS reform, the general-purpose grant was only first explicitly budgeted for in 2001. And it was only in 2012 that the Ministry of Finance set up the current formal standardized approach to calculate the equalization transfer. These changes have much improved the stability and transparency of this category of transfers.

(b) The “pre-tax sharing system grants”. These grants are actually the contracted fixed grants existing under the “contracted fiscal system” before the TSS reform in 1994. These transfers have ensured that the “poor provinces” have total nominal revenues that are not less than what they were in 1993. At the present time there are only about 16 provinces receiving these grants. Most of these provinces are in the central and western regions of the country.

(c) The transfer to minority regions. This transfer was launched in 2000 with RMB 1 billion to further support the development of minority regions. The pool of funds is composed of two parts: the first part is financed directly from the central budget with a yearly growth rate equaling the growth rate of centrally shared VAT revenues;⁵ the second part is 80% of the total amount of the yearly increase in collections for the central government share of the VAT collected in minority regions.

⁴ The calculation method can be found in “The methods of the central to local equalization transfer in 2012”, see http://yss.mof.gov.cn/zhengwuxinxi/zhengceguizhang/201207/t20120725_669218.html.

⁵ Note that the base pool of these funds is RMB 1 billion in year 2000.

(d) Transfers for increasing the wage standard of civil servants. These transfers were designed to support provinces in the central and west regions of the country for the implementation of policies mandated by the central government for increasing the wage standard of civil servants. The main justification was that without this fiscal assistance from the central government, many provinces in these regions would have faced serious fiscal difficulties complying with the wage mandate.

(e) Transfer for the rural “Tax-for-Fee” reform⁶ and the elimination of the agriculture tax. The purpose of this transfer was to partially compensate local governments for the revenue losses caused by the implementation of the rural “Tax-for-Fee” reform in the early 2000s and the complete abolition of the agriculture tax in 2006.

(f) Other general-purpose transfers with an equalization objective. These include, among others, transfers to cities suffering from natural resource exhaustion, transfers for the replacement of the local market place management fee and the industry and commercial entity fee, transfers for supporting the Oil Tax and Fee Reform, and transfers for regions with important ecological functions.

(3) *Earmarked specific transfers*

As of 2013 there were 220 specific-purpose grants. The plans are that one third of these programs will be cut in the 2014 budget. Earmarked specific transfers typically involve the central government response to high-priority emergencies or are generally associated with particular programmatic objectives; some examples include fiscal stimulus packages, bail-outs of local government social protection programs, or the “compulsory education transfer” introduced in support of the rural compulsory education program.

⁶ See Lin and Liu (2007) for a detailed description of the reform, and Wang and Zhao (2012), Alm and Liu (2013) for an analysis on its potential impacts.

2.2 Transfers below the provincial level

The 1994 TSS reform is generally perceived as an incomplete reform because it formally regulated only the intergovernmental fiscal relations between the central and provincial governments, leaving ample discretion for provincial governments to set up their own fiscal relations with their local (sub-provincial) governments. For this reason, fiscal arrangement schemes at the sub-provincial level vary from province to province (Shen et al. 2012). In general, however, these sub-provincial arrangements follow the basic setup of the center-provincial system and fiscal transfers there can also be loosely categorized into three groups: tax rebates, equalization transfers, and ad hoc transfers. But generally speaking the sub-provincial transfer systems are less well developed and their main focus is still the pre-TSS reform practice of filling the gaps between current revenues and expenditures.⁷

3. Equalization Impact of the Current Transfer System

3.1 Horizontal revenue disparities across and within provinces

China's intergovernmental finance system has been characterized by persistent horizontal fiscal disparities across provinces and within provinces, especially when the focus is on those tax revenues fully assigned to the sub-national governments. Here we review the trends in these fiscal disparities across and within provinces.⁸

Horizontal disparities in own revenue across provinces: Revenue assignments generate pronounced fiscal disparities across provinces, especially for the very distinct eastern region—relatively rich, and the central and western regions—relatively poorer. Over time these disparities have not become less pronounced. In fact, after the 1994 TSS reform, horizontal regional disparities in sub-national own revenues deteriorated (Table 1). A

⁷ For more detailed discussions of the sub-provincial fiscal system in China, see Wong (1994) and MOF (2006).

⁸ Where there are differences in the level of economic development, there are differences in fiscal capacity and these differences are naturally enhanced with higher levels of tax autonomy. Most countries deal with this issue by strengthening the equalization grant system.

Table 1. Real Per Capita Disparities in Own Revenue across Provinces: 1986-2011

Year	Mean	C.V.	Min	Max
1986	136.6	1.51	29.4	1063.3
1987	133.2	1.34	30.2	913.4
1988	116.4	1.18	37.6	720.0
1989	111.9	1.07	37.3	634.4
1990	110.7	1.04	38.6	604.8
1991	116.1	0.92	42.8	541.1
1992	112.9	0.90	44.7	518.1
1993	129.5	0.84	51.1	561.3
1994	74.2	0.90	27.4	326.1
1995	80.8	0.86	26.9	329.6
1996	93.7	0.88	31.6	384.5
1997	101.1	0.93	34.0	431.8
1998	118.9	0.95	39.2	492.1
1999	134.5	0.99	44.3	555.2
2000	149.5	1.04	48.2	725.2
2001	184.3	1.17	56.1	1060.9
2002	202.6	1.21	62.2	1197.7
2003	232.2	1.25	70.1	1427.6
2004	265.6	1.24	80.1	1575.0
2005	334.1	1.28	101.5	2109.2
2006	397.3	1.25	117.2	2532.7
2007	484.3	1.25	146.6	3071.7
2008	552.2	1.23	164.1	3531.8
2009	630.4	1.24	192.4	4124.0
2010	733.8	1.16	232.2	4611.7
2011	895.5	1.11	291.3	5473.1

Source: China Statistical Yearbooks and Authors' Calculation

significant contributing factor has been the different rates of economic growth in the different regions. Over time the coefficient of variation for per capita own revenues increased reaching a peak in 2005 of 1.28 and slightly declining in more recent years. These horizontal disparities are also reflected in the ratio of the maximum to minimum own revenues per capita across provinces. This ratio stood at 11-fold in 1993 just before the TSS reform and reached a peak in 2005 of 20-fold; in recent years the ratio has decreased only slightly, still standing at 18-fold in 2011.

Own revenue disparities within the provinces: Two types of factors influence fiscal disparities within the provinces. First, an important feature of China's intergovernmental finance system is that provinces have almost complete discretion to design the revenue assignments they implement for their sub-provincial governments. And in fact revenue assignments within each province can be quite different. Second, there are often significant differences in the levels of economic development and therefore tax bases across jurisdictions within the provinces. Having a strongly hierarchically vertical government structure potentially compromises the effectiveness of national equalization policies in China. Final equalization outcomes clearly also depend on the equalization policies implemented by the provincial governments.

Table 2 shows the disparities in own revenues per capita across counties within each province from 1995 to 2011. The figures clearly indicate significant levels of disparity within provinces, which vary over time and with trends that differ significantly across provinces. While within-province disparities have declined in the eastern region, which, again, comprises the richest provinces in China, the trends in other regions have been oscillating or have increased quite significantly as in the cases of the northwest and southwest regions. On average, the coefficient of variation for per capita own revenues within provinces only changed slightly over the observed period; it increased from 1.1 in 1995 to a value around 1.3 in 2005, and then declined to a value around 1.0 by 2011. Even so, as shown in Figure 1, own revenue disparities within provinces have become less pronounced across different provinces over the period 1995-2011; the provinces with the highest initial levels of disparities in own revenue registered the largest drops, while the provinces with low initial levels of disparities in own revenue generally experienced an increase in within-province disparities. This point is consistent with what was found in Wang and Herd (2013).

It thus appears that if the central government cares about reducing horizontal fiscal disparities, then central government policies need to take into account the existing horizontal fiscal disparities within the provinces and to consider the best way to do that given China's strong hierarchical vertical structure of government.

Table 2. Per Capita Own Revenue Disparities within Provinces: 1995-2011

	Mean			C.V.			Min			Max		
	1995	2005	2011	1995	2005	2011	1995	2005	2011	1995	2005	2011
Beijing	367	3030	8586	0.6	0.5	0.6	18	1010	2889	741	6092	20516
Tianjin	793	1368	6410	2.8	0.6	0.7	125	526	1834	9954	2906	14893
Hebei	132	599	1012	1.8	3.2	0.9	33	37	154	2521	20445	6393
Shanxi	132	413	1716	0.6	0.7	0.8	24	56	209	470	1562	5649
Mongolia	150	1104	4107	1.1	1.1	1.6	37	93	167	1537	5312	40509
Liaoning	266	720	3191	2.6	1.7	0.5	46	76	692	6870	11696	7472
Jilin	97	272	1519	0.7	0.6	0.5	29	83	336	348	1036	3500
Heilongjiang	155	299	1113	1.3	2.0	1.3	49	41	170	1784	4957	10691
Shanghai	907	6596	8302	0.7	0.4	0.8	396	2749	3443	3215	11245	30694
Jiangsu	156	1707	5441	0.7	1.3	0.9	37	128	1451	456	15980	27655
Zhejiang	273	2149	3636	2.3	1.5	0.6	46	320	918	4355	26499	10909
Anhui	108	268	1267	0.4	0.8	0.8	48	41	164	335	1377	4879
Fujian	210	863	1788	0.5	1.7	0.7	88	144	607	710	9499	7548
Jiangxi	137	345	1546	0.9	0.4	0.6	40	104	326	1193	784	5886
Shandong	175	858	1965	2.2	1.8	0.8	36	109	410	3822	17022	7491
Henan	88	383	916	0.7	1.1	1	27	54	191	308	3576	4596
Hubei	94	303	952	0.5	1.1	0.7	31	53	148	273	2326	3614
Hunan	131	375	777	0.6	1.4	0.9	34	64	277	538	4110	5218
Guangdong	168	867	1144	1	2.6	0.9	32	58	168	878	21394	5577
Guangxi	114	335	775	0.5	1.9	0.9	24	65	182	349	6239	4208
Hainan	188	246	1567	0.6	0.7	0.7	69	24	610	588	765	4411
Chongqing	106	437	5219	0.9	0.9	0.4	41	83	2761	504	1654	10399
Sichuan	106	271	1047	0.7	1.2	0.9	5	40	141	486	1834	6395
Guizhou	76	285	842	0.7	1.1	0.7	22	69	199	375	2018	2865
Yunnan	156	340	1051	0.9	0.9	0.9	20	55	198	838	2117	8076
Shaanxi	86	410	1431	0.7	2.2	1.8	13	28	121	334	6117	14813
Gansu	102	218	951	1.1	1.5	2.2	8	19	98	582	2431	16330
Qinghai	124	326	1597	0.9	1.4	2.7	29	22	98	517	2121	25941
Ningxia	58	359	1899	0.8	0.8	1	6	39	138	176	790	6086
Xinjiang	160	536	2573	2.1	1.4	1.2	2	39	229	3029	6088	16840
Mean	194	876	2478	1.1	1.3	1	47	208	644	1603	6666	11335

Source: Ministry of Finance, China Statistical Yearbook for Regional Economy, and Authors' Calculation

Own revenue disparities within vs. across provinces: In order to document the relative importance of own revenue disparities within provinces and across provinces in contributing to the overall revenue disparities in the nation, we calculate the Theil index based on county data that provides a way to decompose the overall disparities into disparities between groups and disparities within groups. As shown in Figure 2, revenue disparities are starker within provinces than across provinces, suggesting that revenue

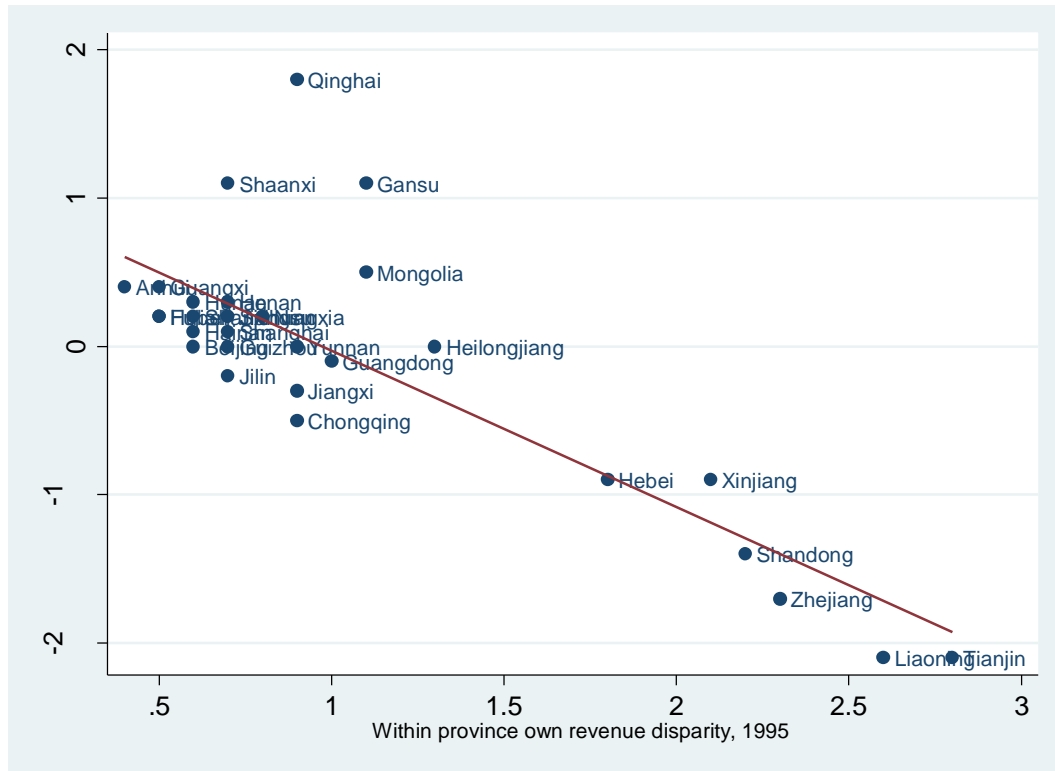


Figure 1. The Initial Level and Changes of Within Province Own Revenue Disparity

Note: changes in within-province own revenue disparity are calculated as the difference of coefficient of variation of per capita county revenue within province for the years 2011 and 1995.

Source: Ministry of Finance and Authors' Calculation

disparities within provinces are the main contributor to the overall revenue disparities in the nation. This is related to the very different economic experience of counties within a province. However, over the years, own revenue disparities across provinces experienced a large increase from a value around 0.13 in 1995 to a value around 0.36 in 2008, while own revenue disparities within provinces experienced a moderate decrease in this same period. In summary, own revenue disparities are larger within provinces than across provinces, but this difference has been diminishing over the years. The relative large value of own revenue disparities within provinces has also dominated the trends of overall own revenue disparities in the country.

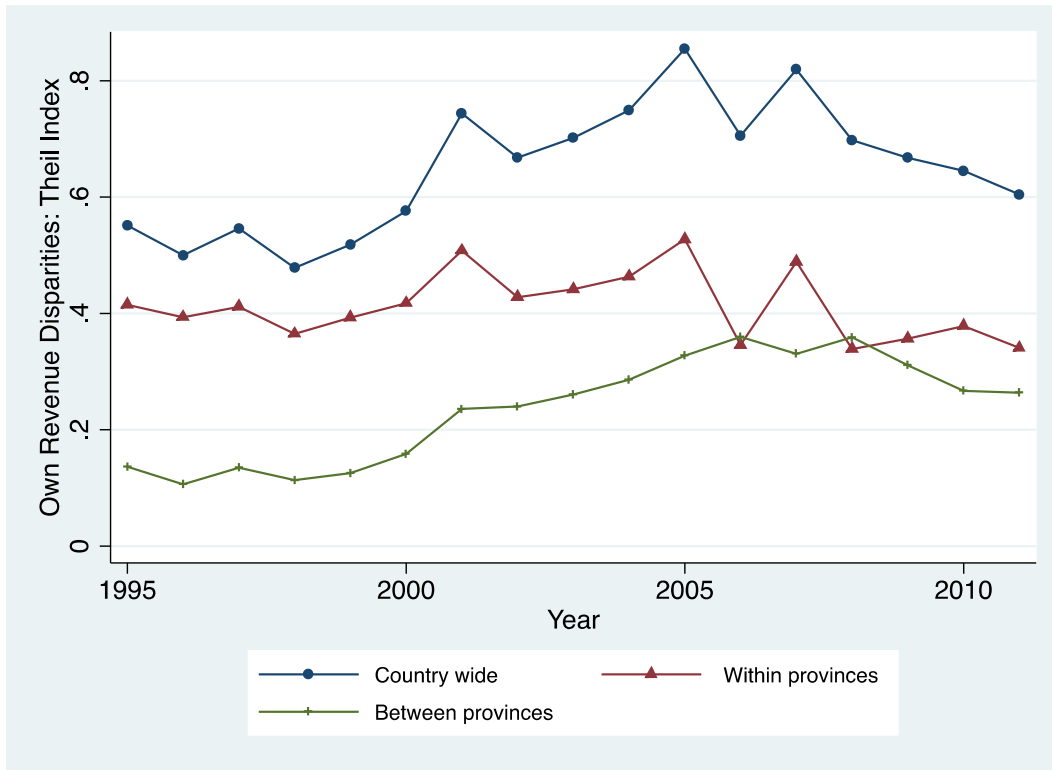


Figure 2. The Decomposition of Own Revenue Disparities, 1995-2011

Source: Ministry of Finance, China Statistical Yearbook for Regional Economy, and Authors' Calculation

3.2 Relative equalizing effects of transfers

The transfer system reduces disparities across provinces but not enough: Here we perform a simple exercise to analyze how the disparities in the prime initial disparities in “own revenues” per capita evolve as we progressively and cumulatively add the other financing sources in the system: first the tax rebates, second the ad hoc transfers, and third the equalization grants. We also present side by side the distribution of expenditures per capita. If the overall impact of transfers is equalizing, we should end with lower disparities in the distributions of expenditures per capita than in the distribution for own revenues, but the question remains how much smaller the disparities in expenditures per capita should be. The results of the exercise are presented in Figure 3. Three things are especially noticeable: (1) provincial disparities in own revenues increased after the 1994 TSS reform, something already noted; (2) the overall effects of transfers is equalizing since provincial disparities in expenditures per capita are significantly lower than the

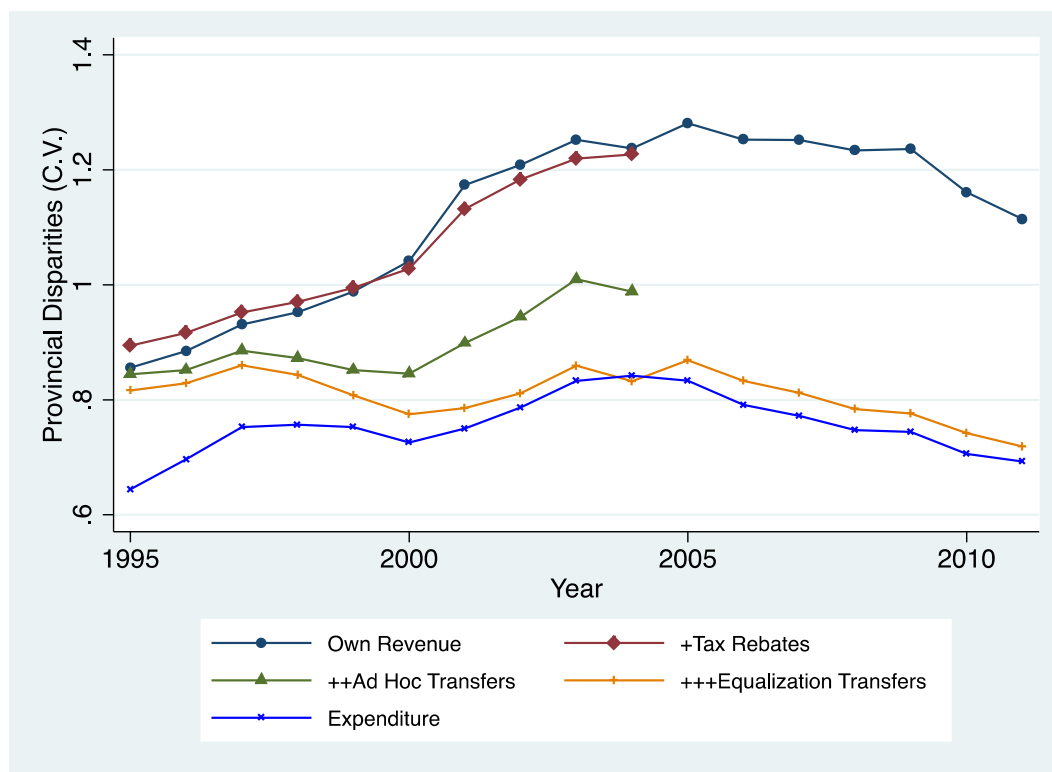


Figure 3. Impact of Fiscal Transfers on Provincial Disparities in Revenues and Expenditures

Note: Figures are calculated at real per capita term. Own revenue is added by tax rebate, ad hoc transfer, and equalization transfer continuously. After the equalization transferred is added, it is equivalent to adding own revenues to total transfers. Data for the decomposition of transfers at the provincial level are only available up to 2004.

Source: China Statistical Yearbooks and Ministry of Finance

disparities in own revenues per capita, results that confirm the recent similar findings in Huang and Chen (2012), Jin et al. (2013), and Wang and Herd (2013). However, the final distribution across provinces in expenditures per capita still shows considerable disparities by international standards; (3) provincial disparities in both revenues and expenditures per capita appear to have declined in the most recent years---a result that is partially due to the increase of the share of the equalization transfers and the corresponding decrease in the share of tax rebates in the overall transfer pool.

Equalization effectiveness of transfers differs significantly across the type of transfers: As shown in Figure 3, the equalization effects of fiscal transfers vary across different components of the transfer system. In general, as is to be expected, the tax rebates do not

perform any equalization role but in fact lead to increased disparities across provinces in the early years. As we already pointed out, the tax rebate was designed as a compromised outcome to smooth the acceptance of the TSS reform by the richer provinces in 1994. On the other hand, both the ad hoc transfers and the equalization transfers have contributed to lower levels of regional disparities in available per capita resources.⁹ In addition, Figure 3 also shows that the equalization effect of those two types of transfers has increased over the years, in large part due to the increased pool of funds dedicated by the central government to these categories of transfers. Recall also that another significant factor for the higher equalizing trend is the fact that the actual volume of the tax rebate was fixed in nominal terms in 1994 and that therefore it has been decreasing in relative importance over the years.

Practically all of the previous results have been at the central-provincial level and this evidence should be interpreted as preliminary from simple descriptive analysis. In order to analyze the equalizing and/or un-equalizing effects of the different components of the transfer system more rigorously, we conduct empirical tests to examine the basic relationship between different components of the transfers and the economic development level of the jurisdiction (proxied by per capita GDP) at both the central-provincial level and the provincial-county level. Given data limitations at the county level, we are only able to decompose total transfers at this level into two categories, tax rebates and all other transfers, which include the equalization transfers and ad hoc transfers. We run a set of panel regressions with per capita transfers as the dependent variable and per capita GDP as the main explanatory variable. In addition, we introduce several other control variables that may affect the transfers received by the jurisdiction. These include total population, the share of population residing in rural areas, the share of public employees in the total population, and the lagged per capita fiscal deficit (defined as the difference between per capita fiscal expenditures and per capita fiscal revenues). In the estimations, we also include the province fixed effects and year fixed effects in order

⁹ While it is generally agreed in the literature that equalization transfers contribute to a lower level of revenue disparities, the equalizing/un-equalizing effect of the ad hoc transfers is found to be mixed in the previous studies (e.g. Heng 2008; Huang and Chen 2012).

to control for the unobserved time-invariant heterogeneity and time-varying characteristics.

An important concern in estimating the model is that of the potential endogeneity of the economic development variable. This issue may arise due to the fact that increasing the transfers received by local governments is indicative of more fiscal resources available and at the discretion of local governments. Therefore, it is quite possible that local governments may have used the transfers they received to promote local economic development. To circumvent the endogeneity issue, we use an instrumental variable approach. The instruments we use for the economic development variable are the one-year and two-year lag in per capita GDP. This is justified in the way that, by its nature, the lags in the economic development variable are correlated with the variable at present, while the transfers received by a locality in the later years should virtually have no significant impact on the economic development level in the past. Finally, we also correct for the potential heteroskedasticity and autocorrelation by reporting the Newey-West standard errors in the estimations.

The regression results are presented in Table 3. As expected, the coefficient for per capita GDP is positive and statistically significant in the regressions for tax rebates (columns (1) and (4)). Thus, it confirms the un-equalizing nature of tax rebates at both the central-provincial level and provincial-county level---better-off provinces/counties receive more per capita tax rebates. However, the coefficient for per capita GDP is negative and significant in the regression for all other transfers (columns (2), (3), and (5)), which again is consistent with what we concluded above that both equalization transfers and ad hoc transfers are somewhat equalizing. Nevertheless, the marginal un-equalizing effect of the tax rebates is relatively larger and it overwhelms the marginal equalizing effect of other transfers.

Table 3. Determinants of different components of transfers

	Central-Provincial Transfers			Provincial-County Transfers	
	Tax rebate (1)	Equalization (2)	Ad hoc (3)	Tax rebate (4)	Equalization (5)
GDP per capita	0.036*** (7.020)	-0.023*** (-6.357)	-0.013*** (-2.818)	-0.004*** (-2.725)	0.011*** (6.951)
Population	0.002 (0.642)	-0.009 (-1.069)	-0.023 (-1.181)	-0.398*** (-3.583)	-0.188*** (-3.523)
Share of rural population	0.772*** (2.871)	-0.264 (-0.879)	-0.998** (-2.282)	-0.068 (-0.537)	-0.254** (-2.575)
Share of public employee/pop	222.477*** (3.847)	18.691 (0.219)	58.653 (0.460)	60.108*** (8.344)	0.795 (0.231)
Lag fiscal deficit per capita	-0.006 (-0.865)	0.356*** (12.193)	0.443*** (4.921)	0.233*** (2.717)	0.027 (0.526)
Province fixed	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	269	269	269	11,610	11,506

Note: The sample period for estimations at the central-provincial level and provincial-county level are 1995-2004 and 1995-2005 respectively; t-statistics are in parentheses; GDP per capita is treated as an endogenous variable and it is instrumented by one-year and two-years lags of GDP per capita; Newey-West standard error is calculated in the estimations; *** p<0.01, ** p<0.05, * p<0.1.

As far as the control variables are concerned, total population is negatively associated with all types of transfers received, but it is only statistically significant in the estimations at the provincial-county level. Fiscal deficit in the previous year generally leads to a higher level of transfers received, particularly for ad hoc transfers and equalization transfers. The share of rural population and the share of public employees in the total population appear to have inconsistent signs across the different estimated equations.

The impacts of fiscal transfers on revenue disparities within provinces vs. across provinces: Given the results above, of greater revenue disparities within provinces than across provinces, we are interested to see how the current transfer system may affect the within and across-province disparities differently. To explore this further, we follow the previous methods to add own revenues by tax rebates and all other transfers continuously

at the county level, and then calculate the corresponding Theil indexes to decompose the overall disparities into disparities within provinces and between provinces.

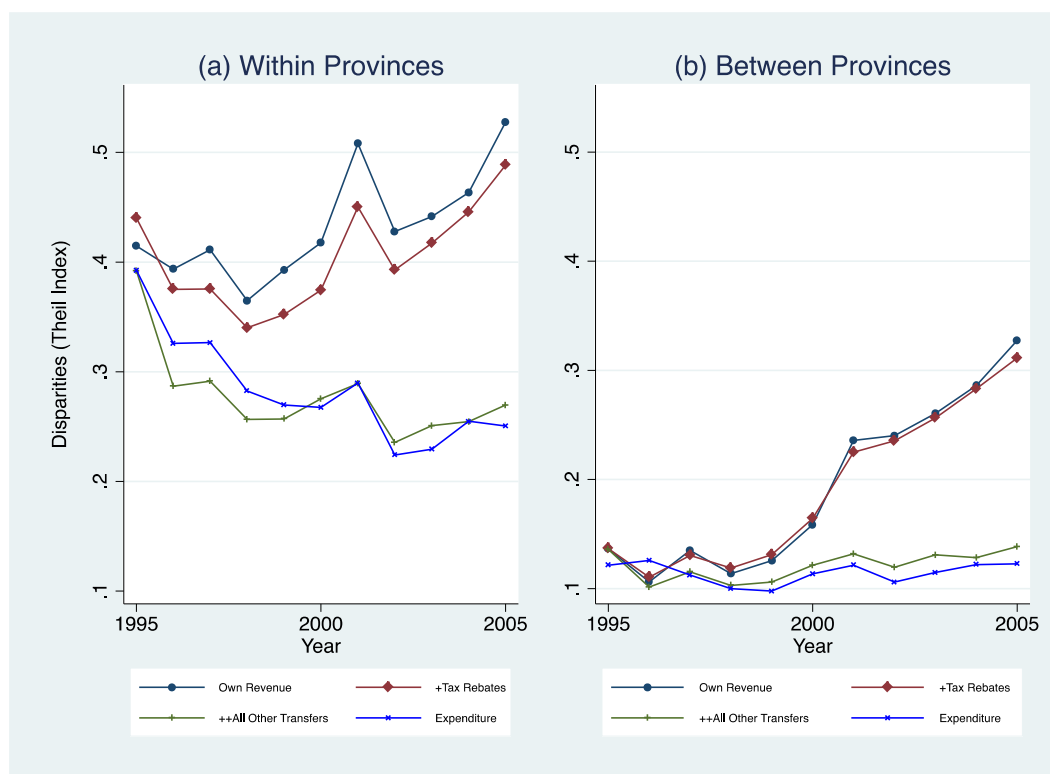


Figure 4. Impact of Fiscal Transfers on the Decomposition of Provincial Disparities in Revenues and Expenditures

Note: Figures are calculated at per capita term. Own revenue is added by tax rebate and all other transfers continuously.

Source: Ministry of Finance and Authors' Calculation

The results are presented in Figure 4. Three noticeable trends are apparent. First, both own revenue disparities within provinces and across provinces are reduced by the transfer system, and the overall equalizing effect is increasing, especially in recent years. This result contrasts with the general observation in the literature that the transfer system had not reduced fiscal disparities at the sub-provincial level (Tsui, 2005; Zhang and Zheng, 2010), but it is in turn consistent with the most recent findings by Wang and Herd (2013). Second, considering the magnitudes of the effects, the reduction of revenue disparities within provinces is relatively larger than the reduction in revenue disparities

across provinces. As shown in Figure 4, even the tax rebates play a minor role in reducing revenue disparities within provinces; however, they play virtually no role in reducing the revenue disparities across provinces.¹⁰ Third, revenue disparities within provinces remain high. Despite the equalizing effects of the transfer system, revenue disparities within provinces are still more than twice as large as revenue disparities across provinces.

3.3 Linking expenditure per capita to differences in access to public services

The most important determinant of access and quality of basic public services is the level of public expenditures. So it is logical that we ask what the relationship is between disparities in expenditures per capita and disparities in service provision. To answer this question we look at the evolution over time of disparities in service provision and the correlation between expenditure per capita and access to service provision. Our focus here will be on education services.

In fact there is a significant correlation between real per capita provincial expenditure on education and the intermediate output measure of the ratio of teachers per 1,000 students in primary schools (Figure 5(a)). In addition the dispersion for both variables, as shown by the coefficients of variation in Figure 5(b), did rise steadily over the period up to 2005 followed by a fast decline in the subsequent years. It could be that this change is related to the “province-managing-county” reform introduced by the central government around that time,¹¹ which meant that some provincial governments started to directly manage their county governments thus bypassing the prefecture level. The reversal in trend indicates some convergence across provinces on the budgetary priority given to this basic service. Nevertheless, with coefficient of variation of 0.8 in 2011, the disparities in education outputs still remain too high.

¹⁰ Indeed, tax rebates enlarge the revenue disparities across provinces in the early years of the reform.

¹¹ Using a panel data set of 108 counties in Henan province for the years 1999-2008, Wang et al. (2012) find that the “province-managing-county” reform reduces local governments’ spending on education. However, if the “province-managing-county” reform was predominantly implemented in provinces with originally high education expenditures, then the trend in declining of disparities in education expenditure across provinces can still be observed.

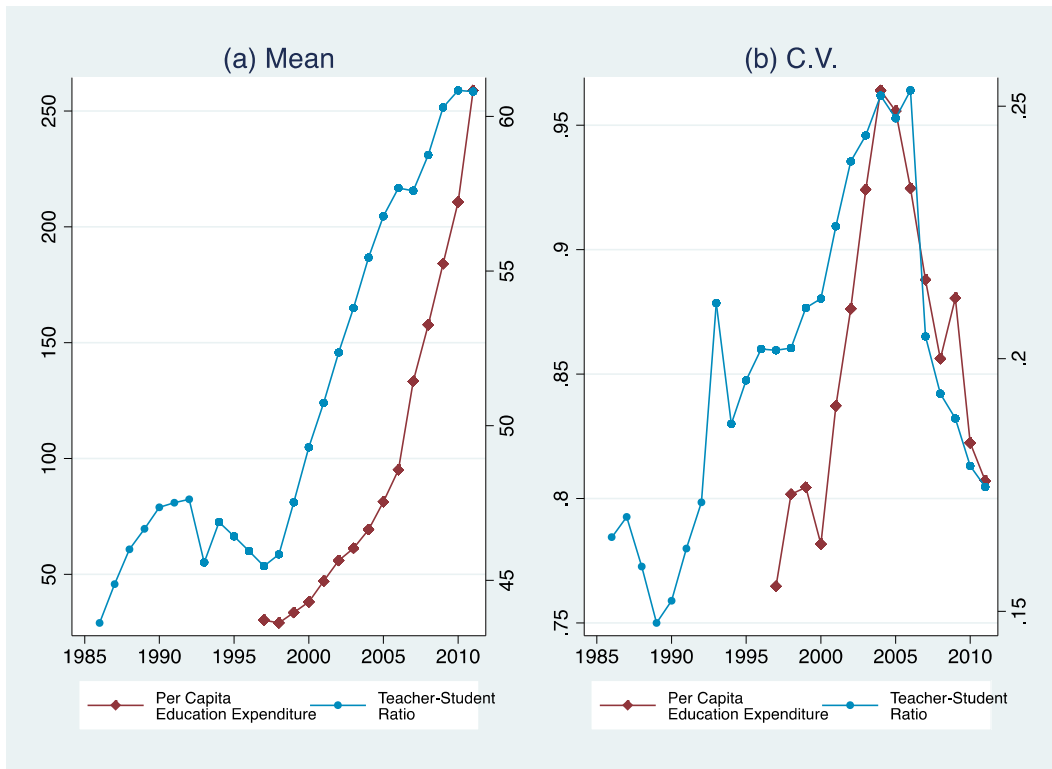


Figure 5. Mean and coefficient variation of per capita education expenditure and number of teachers per 1,000 primary students, 1986-2011.

Source: China Statistical Yearbooks and Authors' Calculation.

4. Options for the Reform of the Current Transfer System

China's system of intergovernmental transfers has been evolving over the past two decades, but it has retained its fundamental nature of origin-based shared taxes supplemented by grants and subsidies for a myriad of purposes and with considerable redundancy. The end result has been a limited degree of equalization among provincial and sub-provincial governments and a complex system of transfers by any standards.¹² Even though in some functional areas disparities have decreased, overall disparities across provinces in available per capita fiscal resources and actual expenditures per capita remain very high by international as well as China's own historical standards. In this

¹² See Zhang and Martinez-Vazquez (2003).

subsection, we review the main issues of the current system and propose several options for the possible reforms of the system.

4.1 Additional funding needed from the central government

In terms of the total pool of funds we have seen above that there has been a steady increase in the dedicated funds, but these have not been enough to reduce the still very high expenditure per capita disparities across provinces. Thus, the first relevant question is how much additional funding would be needed from the central government---for example in some form of equalization grant---to bring the less well-off provinces to the country average.

There are actually many possible ways to answer this question. A simple but still quite informative approach is first to select the national average fiscal capacity as the normative measure of fiscal need for the provincial governments. With this we then can calculate the increase in the overall pool of funds for transfers required to bring provinces with fiscal capacity below the national average to the national average.¹³ The calculation of the national average of fiscal capacity can be based on a measure using only “own revenues” or alternatively using total revenues including transfers from the central government. Our calculations indicate that these amounts would have been 979,273 million and 933,276 million respectively, based on average values for 2009-2011.¹⁴ This would represent 28.8% and 27.4%, respectively of the total central government transfers (average values for 2009-2011). Although by no means insignificant these are feasible levels of additional funding if done over a period of several years.

A significant portion of the required funds could come from a parallel structural reform granting more revenue autonomy to the provinces; this type of reform would mostly benefit the richer provinces, but the overall outcome would be a reduction of intergovernmental transfers especially to the richer provinces, which would benefit the

¹³ We must emphasize that our simple approach leaves out considerations involving economies of scale and scope or demographic and geographic characteristics of the provinces. The national standard could potentially be adjusted by an index incorporating differences in relative expenditure needs and costs of services.

¹⁴ Our calculation procedure is not reported in this paper, but it is available upon request.

most.¹⁵ On the down side, higher equalization transfers would no doubt increase the level of transfer dependence of poorer provinces. However, the entire policy package—simultaneously increasing revenue autonomy and redistributing the recipients of transfers---would make the intergovernmental finance system more equitable by ensuring that minimum service standards are provided to all citizens regardless in what part of the country they live. The policy package would also have efficiency benefits by limiting population migration driven simply by differences in the standards of public service provision. There are also positive political economy aspects in the package, since both relatively richer and relatively poorer provinces may perceive themselves as winners.

However, one caution we need to highlight here is that if the additional funding is distributed through unconditional equalization grants, there is no guarantee that the additional funds would be spent on essential social services. The strong current incentives for subnational officials to spend on infrastructure and economic development projects would remain in place. Because of this, a well-balanced increase in both unconditional equalization transfers and conditional grants, especially sectoral block conditional grants, in some particular priority areas of expenditure/services would appear to be a more balanced desirable way to allocate the additional funding.

4.2 Bringing more certainty to the available pool of funds for equalization

At present the pool of funds available for equalization is decided in the annual budget on an ad hoc basis. This brings budget uncertainty to the recipient subnational governments and signals lack of commitment by the central government to the equalization objective, which may be sacrificed under budgetary pressures. In the international practice this issue of budgetary uncertainty and lack of commitment is addressed by introducing a (funding) formula for determining the pool of available equalization funds; one common such rule is a percent of total tax revenues lagged one or two budget periods. Actually in recent

¹⁵ As a matter of fact, our calculation of the transfer dependence (i.e. the ratio of fiscal transfers to total expenditure) over the past 15 years indicates that the general tendency has been for richer provinces in the eastern region to become less reliant on transfers, at the same time that relatively poorer provinces in the central and especially the western regions have become increasingly more reliant on transfers. Given that there have been practically no changes in revenue assignments in China over the past two decades, it is likely that these different trends can at least be partially explained by the differing sizes of the regional economies and their respective rates of growth.

times the central government has moved toward the formalization of the available pool of equalization funds by earmarking its share of income tax revenues for equalization. But, of course, these are only a part of the overall funds currently used for equalization.

4.2 Addressing the fragmentation of conditional grants

Over the last several decades China has followed the path of many other countries around the world using and abusing the system of conditional grants to address new policy initiatives, emergencies or old problems that needed fixing. The result has been a complex and highly fragmented conditional grant system, which imposes high administrative burdens on subnational governments. The fact that most of these conditional grants have matching fund provisions had added to heavy budgetary pressures on subnational governments. To cope with these pressures subnational governments have used unorthodox public accounting, such as “double-matching” or using the same funds to comply with the matching provision in different grants.

In dealing with the issue of fragmentation the recent international experience shows that many countries have consolidated their myriads of conditional grants into a much smaller number of block grants supporting national sectoral strategies. The block grants are also conditional—that is, the resources need to be used in a particular sector but they avoid micro-management by allowing subnational governments more discretion for the very specific uses. However, these grants tend to provide better balance between ensuring the use of resources in the pursuit of sectoral objectives and granting subnational governments more budget discretion. Similar reforms could have a high payoff for China.

4.3 Eliminating the other counter-equalizing elements in the transfer system

Existing horizontal disparities are to a large extent due to several policy choices made within the framework of the 1994 TSS reform, which were fundamentally counter equalizing. At the top of those choices was the “tax rebate” which purportedly was introduced to buy the support of the richer provinces for the 1994 reform. Also of significant importance was the adoption of revenue sharing on a derivation basis or where

the money is collected. The implication of the derivation basis is that richer provinces get to keep more funds because they have tax bases.¹⁶

The un-equalizing role of the tax rebate has been reduced over time because by design the rebate was fixed in nominal terms. Similarly, the un-equalizing effects of the derivation principle in tax sharing have been reduced because the central government has increased its sharing rates for certain taxes in recent years. Beyond increasing the pool of funds available, further equalization could be achieved by changing the allocation of the shared VAT revenues to a formula based on population. Of course, quite likely the wealthier provinces would oppose this.

4.4 The need to further formalize the sub-provincial transfer system

Along the lines of a strong federalist system, something that formally China is not, provincial governments have virtually complete discretion to arrange their fiscal relations with prefectures and cities, while the latter can do the same vis-a-vis their counties, and so on. After the 1994 TSS reform subnational governments supposedly restructured their intergovernmental fiscal relations with lower-level governments. However, the general perception has continued to be that provincial and prefecture governments do not allocate funds commensurate to the expenditure needs of lower level governments and that often they retain funds originating at the center which were intended to reach county and township level governments.

The question is whether or not subnational governments currently have too much discretion on how to organize their intergovernmental fiscal relations with their lower-level governments. High levels of discretion offer advantages especially in a country as large and diverse as China. On the other hand, the central government also needs venues to ensure the attainment of its own policy objectives, such as equalization. Thus there is a need to find ways to balance flexibility at the subnational level with the ability of the central government to implement its own policies and achieve its own policy objectives.

¹⁶ Merely as an indication, in 2000 just before income tax shares were amended, the nine provinces in the coastal area (Beijing, Tianjin, Liaoning, Shandong, Jiangsu, Zhejiang, Fujian, Shanghai, and Canton) collected about 70% of the total income taxes.

The “province-managing-county” reform has been a relatively recent move in that direction; but even though this reform has helped to streamline vertical fiscal relationships, it clearly falls short of reaching the right balance between subnational flexibility and ensuring national objectives.

Reaching a balance will likely require the redesign of the sub-provincial transfer system. These reforms actually would closely resemble those needed at the central level: setting aside sufficient funds for equalization grants, using explicit funding rules to enhance predictability, and using improved allocation formulas capturing the disparities in fiscal capacity and expenditure needs of lower-level jurisdictions. All this may require more central government rules and intervention in the subnational finances. The goal of granting all citizens access to basic public services quite likely warrants it.

5. Concluding remarks

One of the most significant policy objectives of the Chinese government at the present time is to move toward a more equal society where all citizens have access to basic public services regardless of where they live. Despite the efforts until now, geographical disparities in expenditures per capita still remain too high, implying that access to basic public services is still too unequal across the country. Going forward and getting closer to the goal of a more equal and just distribution of services will require further increasing the overall pool of funds dedicated to equalization and making this increased funding more stable and predictable by adopting an explicit funding rule for the available pool of funds. The current allocation formula also could be further improved by refining the measurements of expenditure needs and fiscal capacity.

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